

Amendment

Please amend this application as follows:

In the CLAIMS

1. (Currently Amended) A weld joint comprising a first workpiece, a second workpiece, and a weld body joining said first workpiece and said second workpiece, which weld body is ~~substantially free of tension anomalies, and~~ comprises ~~an area attributable to a higher order pass that comprises~~ slag-free weld puddle of substantially pure nickel that yields a weld joint substantially free of porosity.
2. (Original) A weld joint as in Claim 1, wherein said area attributable to a higher order pass comprises greater than or equal to approximately 83.5% nickel.
3. (Original) A weld joint as in Claim 1, wherein said area attributable to a higher order pass comprises greater than or equal to approximately 90% nickel.
4. (Currently Amended) A weld joint comprising a first ~~work segment~~ workpiece, a second ~~work segment~~ workpiece, and a weld body joining said first workpiece and said second workpiece, said weld body comprising an area attributable to a higher order pass that comprises substantially pure nickel, the surface of which is substantially free of slag and slag residuals, and which surface exhibits ~~having an~~ average of four or fewer ~~tension anomalies~~ pits visible to a naked eye per square

~~inch, said weld body comprising an area attributable to a higher order pass that comprises substantially pure nickel.~~

5. (Original) A weld joint as in Claim 4, wherein said area attributable to a higher order pass comprises greater than or equal to approximately 83.5% nickel.
6. (Original) A weld joint as in Claim 4, wherein said area attributable to a higher order pass comprises greater than or equal to approximately 90% nickel.
7. (Currently Amended) A weld joint as in Claim 4, wherein said weld body has an average of three or fewer ~~tension anomalies~~pits visible to a naked eye per square inch.
8. (Original) A weld joint as in Claim 7, wherein said area attributable to a higher order pass comprises greater than or equal to approximately 83.5% nickel.
9. (Original) A weld joint as in Claim 7, wherein said area attributable to a higher order pass comprises greater than or equal to approximately 90% nickel.
10. (Currently Amended) A weld joint as in Claim 4, wherein said weld body has an average of two or fewer ~~tension anomalies~~pits visible to a naked eye per square inch.

11. (Original) A weld joint as in Claim 10, wherein said area attributable to a higher order pass comprises greater than or equal to approximately 83.5% nickel.
12. (Original) A weld joint as in Claim 10, wherein said area attributable to a higher order pass comprises greater than or equal to approximately 90% nickel.
13. (Currently Amended) A weld joint as in Claim 4, wherein said weld body has an average of one or fewer ~~tension anomalies~~ pits visible to a naked eye per square inch.
14. (Original) A weld joint as in Claim 13, wherein said area attributable to a higher order pass comprises greater than or equal to approximately 83.5% nickel.
15. (Original) A weld joint as in Claim 13, wherein said area attributable to a higher order pass comprises greater than or equal to approximately 90% nickel.
16. (Currently Amended) A weld comprising a higher order pass, and having a gradient of nickel purity as measured along a throat of said weld that generally increases between a root of said weld and a point within said higher order pass, said higher order pass being weldable with another weld pass without removal of slag.
17. (Currently Amended) A weld comprising a second order pass and a plurality of higher order passes, said plurality of higher order passes comprising at least a

third order pass and a fourth order pass, the weld having a gradient of nickel purity that generally increases from a second order pass through said third order pass and said fourth order pass, and being substantially free of porosity and of slag.

18. (Currently Amended) A weld comprising a higher order pass, and having a gradient of nickel purity as measured along a throat of said weld that generally increases as the distance from a root of said weld increases, a face of said weld having an average of four or fewer ~~tension anomalies~~ pits visible to a naked eye per square inch, said face being substantially free of slag.

19. (Currently Amended) A weld as in Claim 18, wherein the face of said weld has an average of three or fewer ~~tension anomalies~~ pits visible to a naked eye per square inch.

20. (Currently Amended) A weld as in Claim 18, wherein the face of said weld has an average of two or fewer ~~tension anomalies~~ pits visible to a naked eye per square inch.

21. (Currently Amended) A weld as in Claim 18, wherein the face of said weld has an average of one or fewer ~~tension anomalies~~ pits visible to a naked eye per square inch.

22. (Currently Amended) A slag-free weld comprising a plurality of passes, which passes comprise a second order pass and at least one higher order pass; wherein

- a. a plurality of said passes generally increase in nickel purity as the order number increases; and wherein further
- b. the last of which passes to increase in nickel purity has an average of four or fewer ~~tension anomalies~~ pits visible to a naked eye per square inch; and wherein further
- c. no pass comprises any flux inclusions.

23. (Currently Amended) A weld as in Claim 22, wherein the last of which second and higher order pass zones to increase in nickel purity has an average of three or fewer ~~tension anomalies~~ pits visible to a naked eye per square inch.

24. (Currently Amended) A weld as in Claim 22, wherein the last of which second and higher order pass zones to increase in nickel purity has an average of two or fewer ~~tension anomalies~~ pits visible to a naked eye per square inch.

25. (Currently Amended) A weld as in Claim 22, wherein the last of which second and higher order pass zones to increase in nickel purity has an average of one or fewer ~~tension anomalies~~ pits visible to a naked eye per square inch.

26. (Currently Amended) A method of producing a highly ductile weld, comprising the steps of:

- a. selecting a weld wire comprising substantially pure nickel
 - b. in the absence of flux, fusing a weld bead of said weld wire onto a workpiece, whereby a first weld pass of weld bead is welded
 - c. fusing to said first weld pass at least one weld pass of said weld wire, whereby an intermediary pass of weld bead is welded
 - d. in the presence of a substantially pure inert gas, fusing to said intermediary pass at least one weld pass of said weld wire in a substantially undiluted condition.
27. (Original) A method of producing a highly ductile weld as in Claim 26, wherein said substantially pure inert gas comprises an inert gas in combination with reducing gasses.
28. (Original) A method of producing a highly ductile weld as in Claim 26, wherein said substantially pure inert gas comprises argon gas.
29. (Original) A method of producing a highly ductile weld as in Claim 26, wherein said substantially pure inert gas comprises argon gas in combination with reducing gasses.
30. (Original) The method of creating a welded ductile iron joint according to Claim 26, further comprising the step of abstaining from pre-heating, post-heating, or chemical antimartensitizing treatment of a heat affected zone.

31. (Original) The method of creating a welded ductile iron joint according to Claim 26, wherein at least one of steps b, c, and d is accomplished by a skip welding technique.
32. (Original) The method of creating a welded ductile iron joint according to Claim 26, wherein at least one of steps b, c, and d is accomplished using a liquid cooled welding torch.
33. (Original) The method of creating a welded ductile iron joint according to Claim 26, wherein at least one of steps b, c, and d is accomplished using a pulse MIG welder.
34. (Original) The method of creating a welded ductile iron joint according to Claim 26, wherein said fusing in at least one of steps b, c, and d occurs by means of spray transfer welding.
35. (Currently Amended) A method of producing a highly ductile weld, comprising the steps of:
- a. selecting a weld wire comprising substantially pure nickel;
 - b. fusing by spray transfer a weld bead of said weld wire onto a workpiece using a liquid cooled welding torch operated in a skip welding technique, whereby a first weld pass of weld bead is welded;

- c. fusing by spray transfer to said first weld pass at least one weld pass of said weld wire using a liquid cooled welding torch operated in a skip welding technique, whereby an intermediary pass of weld bead is welded;
- d. in the presence of a substantially pure inert gas, using a liquid cooled welding torch operated in a skip welding technique to fuse, in the absence of flux, by spray transfer to said intermediary pass at least one weld pass of said weld wire in a substantially undiluted condition.

36. (Original) The method of creating a welded ductile iron joint according to Claim 35, wherein at least one of steps b, c, and d is accomplished using a pulse MIG welder.

37. (Original) The method of creating a welded ductile iron joint according to Claim 35, further comprising the step of abstaining from pre-heating, post-heating, or chemical antimartensitizing treatment of a heat affected zone.

38. (Original) A method of producing a highly ductile weld as in Claim 35, wherein said substantially pure inert gas comprises an inert gas in combination with reducing gasses.

39. (Original) A method of producing a highly ductile weld as in Claim 35, wherein said substantially pure inert gas comprises argon gas.

40. (Previously Presented) A method of producing a highly ductile weld as in Claim 35, wherein said substantially pure inert gas comprises argon gas in combination with a reducing gas.

41. (Currently Amended) A method of creating a welded ductile iron joint having a yield strength of less than a tensile strength of a heat affected zone in said ductile iron joint, comprising compensating for a brittleness of said heat affected zone by creating a highly ductile weld bead in the absence of flux using a filler metal or a consumable electrode of a high ductility material consisting essentially of nickel.

42. (Original) The method of creating a welded ductile iron joint according to Claim 41, wherein said heat affected zone is not subjected to any of pre-heating, post-heating, or chemical antimartensitizing treatment.

43. Cancelled